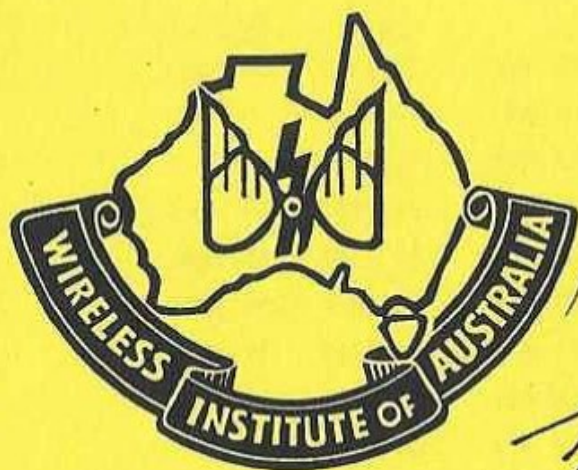
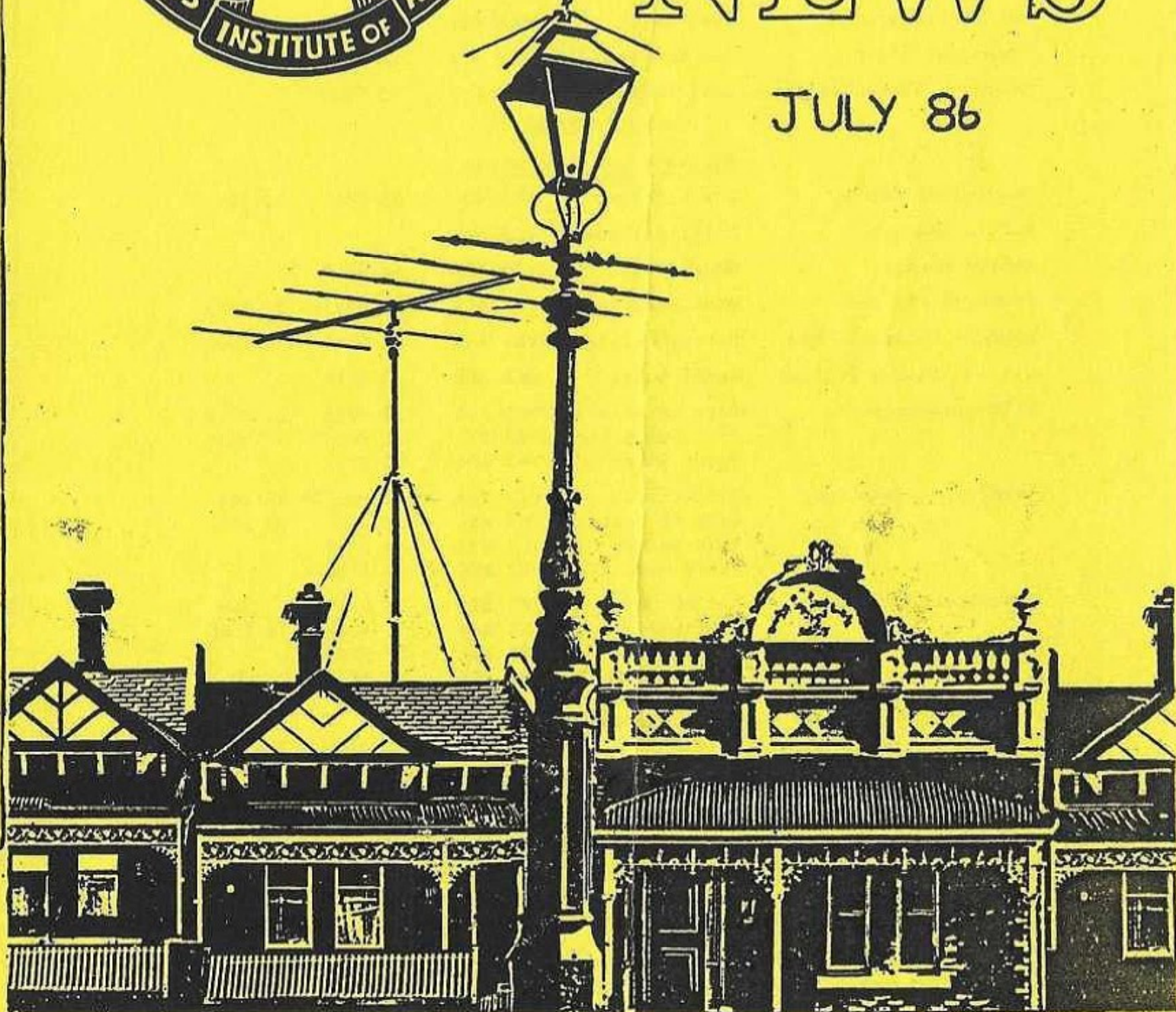


86/07 01



B.A.R.G. NEWS

JULY 86



● **Monthly Newsletter of the
Ballarat Amateur Radio Group**

86/07 02

Executive Committee

			<u>Home</u>	<u>Business</u>
President	Bob Terrill	VK3 BNC	39 5317	39 1001
Vice President	Lou Iaquinto	VK3 DFI	49 2200	
Secretary	Jim Wright	VK3 CFB	32 7563	
Assistant Secretary	Dick Forrester	VK3 VU	35 7663	39 1001
Treasurer	Harry Hekkema	VK3 KGL	35 7563	39 1001
Publicity Officer	John Hazledine	VK3 CFH	39 1971	39 1035
Education Officer	Ian McDonald	VK3 AXH	41 3717	31 1317
Net Co-ordinator	Fred Quick	VK3 KQF	32 3216	32 6455
Technical Officer	Ian Robinson	VK3 BTX	32 4139	
Member's Representative	Neil Davidson	VK3 KQQ	35 9612	

#####

Officers and Committees

Newsletter Editor	Ron Watkins	VK3 XOA	35 6017	32 1447
Q.S.L. Manager	Cliff Bilston	VK3 PAF		
Awards Manager	Maurie Batt	VK3 XEX	42 2245	
Property Officer	Dick Antosiewicz	VK3 AEX	32 3273	31 1818
Hamfest Convenor 1986	Murray Felstead	VK3 AAI	42 0447	31 5000
W.I.A. Liaison Officer	Geoff Smith	VK3 ADB	33 2112	
WICEN Committee	Dick Antoziewicz	VK3 AEX	32 3273	31 1818
	Dick Forrester	VK3 VU	35 7663	39 1001
	Geoff Smith	VK3 ADB	33 2112	
Newsletter Committee	Ron Watkins	VK3 XOA	35 6017	32 1447
	Dick Forrester	VK3 AEX	35 7663	39 1001
	John Brown	VK3 KJB	39 1014	
	Henry Moritz	VK3 DXC	35 5130	
Technical Committee	Ian Robinson	VK3 BTX	32 4139	
	Phil Seddon	VK3 AQM	31 5220	31 3166
	Maurie Batt	VK3 XEX	42 2245	
	Dick Antoziewicz	VK3 AEX	32 3273	31 1818

#####

B.A.R.G. meets on the **LAST FRIDAY** of every month at the Ballarat Education Centre, Hopetoun Street, Ballarat at 7.30 pm.

Committee meetings are held at the Education Centre on the Wednesday of the week prior to the Club meeting, at 7.30 pm. Members of the Executive are expected to attend and any Club member with business for discussion is welcome.

All correspondence should be addressed to -
The Secretary, B.A.R.G. Inc., PO BOX 216E, BALLARAT EAST. 3350.

Applications for Awards to Maurie Batt, RSD ROKEWOOD JUNCTION 3351.

86/07

02A

PRESIDENTS COMMENT

Another year has passed and with it our thanks go to Lou DFI, who has so ably lead our radio group. Lou had a lot of business commitments and also further to travel to both committee and general meetings. To Lou and his committee, we would like to say a big thankyou.

Any organisation is only as good as its members and I know that we can look forward to your support in a mutual endeavour to enjoy a great hobby. Naturally, I have some ideas that I am looking forward to implementing in an endeavour to expand our horizons and perhaps stimulate more interests.

A programme has been drawn up and will be presented to our next meeting. To overcome our problem of communication, we have moved the committee meeting back one week so that we have time to get things into print to facilitate discussions and comments at the following general meeting.

Please keep 29th August free, as Doug McLeod has agreed to come along and give a talk on mobile antennas. Doug will also demonstrate tuning and matching techniques. If you heard Doug last time I know you won't miss him in August. Our awards will come under scrutiny by a sub committee led by Geoff ADB, so let him have your ideas. By next magazine things will have crystalised, so more then.

73's DE

Bob VK3BNC

86/07 02 B

86/07 03

MINUTES OF ANNUAL GENERAL MEETING HELD 27th JUNE 1986.

MEETING OPENED at 8.10pm by President Lou who welcomed the large assembly of Members and Visitors.

APOLOGIES KQQ, WN, PUD, PFF, NIZ, SE.

MINUTES as printed in Newsletter confirmed. PAF/BFC

CORRESPONDENCE Letter of thanks from Beaufort G.G. for Code kit.

TREASURERS REPORT and Balance Sheet for 1985-86 received. DOK/CFI.

QSL MANAGER Cliff reported that he received 278 cards and sent 122.

MOTION Moved Cliff PAF seconded Leon NLR that secretary write to WIA suggesting that unclaimed cards be returned to sender, stamped with reason for return. Motion carried.

EDUCATION OFFICER Bob BNC stated that the NAOCP Course had been cancelled owing to lack of participants.

PROPERTY OFFICER Dick AEX submitted a list of Club property in good order with a value of around \$1300.

NEWSLETTER Please keep contributions coming in.

REPEATER RBS Dick VU reported that the equipment is just about ready to go but still waiting on site permission and licence.

DEACON The licence for the Deacon has been received and it will operate on 432.535 mhz. It is hoped that this will be in service shortly.

MOTIONS Moved by Jim (FB seconded Gordon PUW that the Model Rules under which the Club operates since incorporation be ammended to read:-
Rule 25 subsection (4).
Any 4 members shall constitute a quorum for the transaction of the business of a committee meeting of the executive committee.
Rule 25 subsection (10).
Except in cases of extreme emergency, all decisions of the committee shall be reported to, and ratified by, members of the Club at the Club meeting following the committee meeting.
These motions were carried.

NET CO-ORDINATOR Fred KQF thanked all Members who assisted on the Club Net.

AWARDS MANAGER Maurie XEX reported applications for 1 Goldrush and 1 Western District award last month, applications have slowed down and after some discussion it was resolved on a MOTION moved by George DOK seconded Fred KQF that the Committee investigate the possibility of a new award. This motion was carried.

AWARDS Since June 1978 \$2077.00 has been paid into the Club account from awards. Begonia \$264, Goldrush \$390, DX Widows \$1243 and Western District \$100.

PRESIDENTS REPORT. President Lou then presented his report, thanking Members and Officers for their support. He then called on George DOK to conduct the election of Officers for 1986-87 and vacated the chair.

ELECTION George then called for nominations for President and Bob BNC was elected unanimously. Congratulations Bob.

All other Offices were quickly filled and a list of these Members appears on page 2 of the Newsletter.

86/07 09

GEORGE DOK then moved a vote of thanks to retiring President Lou which was carried with acclamation and Bob took the chair.

PRESIDENT Bob thanked the members for their confidence and said that continuance of that support would ensure another good year for the Ballarat Amateur Radio Group Inc.

GENERAL BUSINESS. Many happy Returns to Eric ZL on his 77th B/day.

PACKET RADIO Murray AAI was declared Packet Radio Advisor and anyone with interest in this direction should contact him for advice and information.

RAFFLE A raffle was held during the evening for a mystery prize donated by Bob DAK. The happy? winner was George DOK.

MEETING CLOSED at 9.25 pm and the members had a pie supper and a good natter before going home. (A very good meeting)

Happy New Year. 73s Jim CFB.

Committee meeting Wednesday 16th July, 7.30pm. Education Centre.

BARG Club meeting Friday 25th July, 7.30pm. Education Centre.

SECRETARY'S NOTES (To try and fill the page)

APOLOGY I forgot to mention in the minutes that Geoff ADB has been appointed to the WIA Victorian Division Council, congratulations Geoff.

AWARDS Maurie has just let me have the following additional information on the number of awards issued since June 78. Begonia 167, Goldrush 234, Western Dist. 237, DX Widows 650 and Steam Rally 236. A total of 1524.

CLUB NET In future there will be a news segment on the Net at 9.00pm. If you have anything you want publicized or of general interest please let me know. We will also include a wanted or for sale section although regulations do not permit us to mention price.

HITCH HIKERS I wonder if there is a ham near you who can't get to meetings because of lack of transport. How about finding out and offering him a lift?

VALVE BANK. Are you looking for a valve?
John CJH is operating a 'Valve Bank' and has a large and comprehensive stock of valves.
This is a none profit operation, the only charge made is for postage.
So if you are looking for a valve drop a line to:-
John Hogan, VK3 CJH,
35 Summerlea Rd,
Mt. Dandenong. 3767.

Also, if you have any valves you no longer require send them to John and help a fellow ham who might be looking for just that one you don't want.

WANTED By JIM CFB.

Kenwood AT120 or AT130 Antenna Tuner. phone 32 7563.

B.A.R.G. FINANCIAL STATEMENTS

86/07 05

JUNE 1986 C.S.B. A/c.

<u>RECEIPTS</u>	\$	<u>PAYMENTS</u>	\$
Cr. Bal. B/Fwd June 1985	39.85	Petty Cash	50.00
Subscriptions	515.50	Room Hire	100.00
M. Batt - Awards	100.00	Newsletter Printing	216.76
Donations	25.00	Aust. Post	153.15
Commissions Junk Sales	62.97	Private Box	23.00
Sale of Call Books and Tapes	142.05	Misc. Printing	134.50
Advertising Space Magazine	12.00	Field Day Expenses	45.46
Bank Interest	8.10	D.O.C. Licence Fees	46.00
Bus Fare Collections	39.00	Dennis Reedman Trust Fund	20.00
Transfer from Hamvention A/c	750.00	X-Mas Break Up	98.45
Transfer from V S & L A/c	770.00	Ladies Com. Advance (Hamvention)	200.00
Novice Course	562.50	Call Book and Tapes	269.95
B.A.R.G. Ladies Com.	200.00	Bus Fees	163.15
		Supper - Meeting	28.00
		Bank Fees	11.66
		Equipment Repeater	673.79
		W.I.A. Membership	78.00
		Education	24.95
		Advance Ladies Com to V S & L A/c	200.00
		Sundry Expenses	202.50
		Cr. Balance	487.65
	<u>\$3226.97</u>		<u>\$3226.97</u>

V S & L A/c

Balance	1606.08	Fees	0.37
Deposit	200.00	Transfer to C.S.B. A/c	370.00
Interest	95.30	Transfer to C.S.B. A/c	400.00
		Cr. Balance	1131.01
	<u>\$1901.38</u>		<u>\$1901.38</u>

AUDITOR'S REPORT

I have examined the books, vouchers and documents of the Ballarat Amateur Radio Group and I Certify that the above mentioned Financial Statements sets out the true position as at 26th June, 1986, according to such books and records.



L. G. McGoldrick

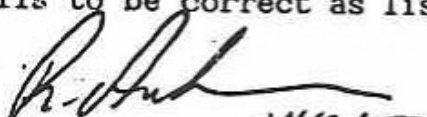
PROPERTY OFFICERS REPORT 1985-86

<u>ANTENNA'S (BEAM)</u>	<u>VALUE</u>
20m. 3 element	\$150
15m. 3 element	\$70
10m. 3 element	\$55
6m. 5 element	\$40
2m. 5 element	\$30
<u>ANTENNA'S (VERTICAL)</u>	
2m. Quarter wave gnd. plane with 10m. coax.	\$15
80-10m. Trap vertical with gnd. planes, mounting stake, guys and storage box	\$55
<u>ANTENNA'S (WIRE)</u>	
80m. dipole with 15m. coax	\$10
40m. dipole with 15m. coax.	\$10
20m. dipole with 15m. coax.	\$10
<u>MASTS TELESCOPIC</u>	
Qty 3 off 6m. masts complete with guys and pegs	\$90
<u>COAXIAL CABLE RG58</u>	
Qty 5 off 16m. lengths and connectors	\$45
<u>MOTOR GENERATER SET</u>	
1 off 3KVA with 8HP petrol engine	\$475
<u>COVENTION EQUIPMENT</u>	
1 CAFE-BAR coffee machine	\$250
<u>SUNDRIES</u>	
1 morse trainer set	
10 clip-boards	
1 large suitcase (field days)	
3 off 20 litre drums (petrol field days)	
3 beepers for kids	
1 funnel (for petrol not spilling)	
1 tent and frame for generater	
1 throwing rig ex. convention	
3 tongs BBQ	
1 large toolbox containing pegs, hammer, wire tie tool and 2 vee bolts	
Various display materials(public functions)	

The above inventory of club equipment, is the total stock of equipment stored for the BARG at 303 talbot. st.
All equipment is in good condition and out of the weather.
I find the above details to be correct as listed.

DICK ANTOSIEWICZ.

PROPERTY OFFICER BARG


VK3AEX

86/07 07

THE ANSWERS TO LAST MONTHS QUESTION BY REG VK3CAZ

dB	Power ratio	Voltage ratio
1	1.25:1	1.12:1
2	1.5625:1	1.25:1
3	2:1	1.4 4:1
4	2.5:1	1.58:1
5	3.125:1	1.76:1
6	4:1	2:1
7	5:1	2.24:1
8	6.25:1	2.5:1
9	8:1	2.82:1
10	10:1	3.16:1
11	12.5:1	3.53:1
12	16:1	4:1
13	20:1	4.47:1
14	25:1	5:1
15	32:1	5.65:1
16	40:1	6.32:1
17	50:1	7.07:1
18	64:1	8:1
19	80:1	8.94:1
20	100:1	10:1

FOR SALE

10 - 6' lengths of tower section (60ft in all) \$15/length
H.T. bolts, nuts, washers, enough to bolt above tower
sections together. \$30 the lot.

100' wind up tower, tilts over at the base. \$600 ono.

WANTED

Rack mount cabinets , in good condition
Any quantity.

Replies for any of the above to-; Leigh Roberts VK3XBI
Ballarat Communications.
or
Ron Watkins VK3XOA

A note from Henry VK3DXC-: Could ALL members bring to the
next meeting 2 of their own QSL cards. More details at
the meeting.

Most test equipment and wot-ever powered by dry cells does'nt incorporate a pilot light due to the increased demand for power this involves; even a LED used normally draws about 20 Ma.

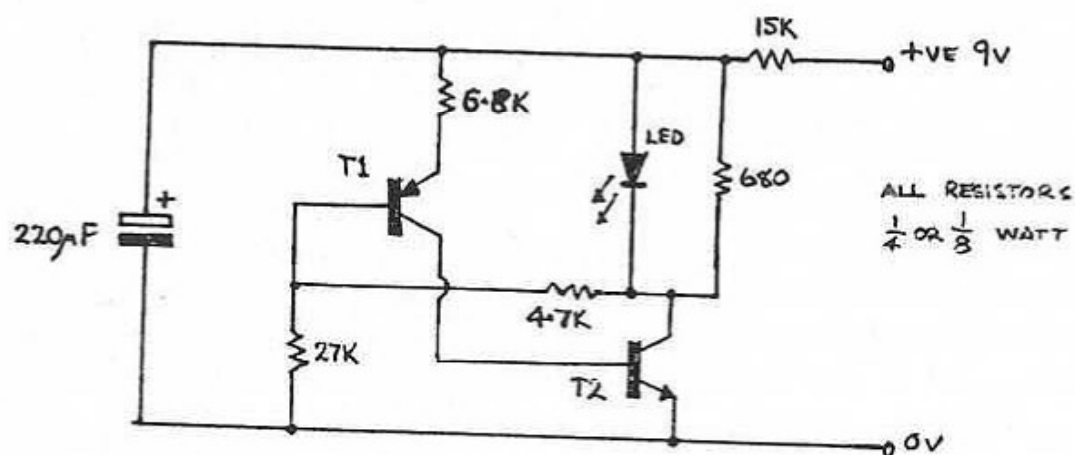
This little gem works on the principle of storing a charge and using it to briefly illuminate a LED.

The cct uses only about 450 microamps. and provides visual indication that you've left your gear on.

The cost of the componets will soon be offset by the saving in dry cells.

The unit can be built on a bit of vero-board and because of size can be installed with a minimum of fuss.

It's easier to cope with than just discovering that your portable signal-generator or grid-dip has been on for a week ---- and guess what ?



Hint:- use a green LED it's easier to see in bright light

T1 & T2 any general purpose transistor will do

eg. T1 2N3645 BC558 BC559 BC157 BC177

T2 BC109 BC108 BC107 BC547

DICK AEX.

Lets start with the power ratios since that is what decibels (db) are all about.

We have got a value for 3db, i.e. 2:1. Every 3db is a doubling (or halving) so we can write 4:1 against 6db in the power column. If we go up by 3db we double again so 9db must be 8:1. It's no surprise to find that going up another 3db to 12db means a ratio of 16:1. There is no reward for pencilling in 32:1 against 15db. Likewise, 18db must be 64:1. So now we have six values to work with. Taking the of 18db consider this 10db in power is equivalent to a 10:1 ratio. So, going down by 10db means a reduction of 10:1. Therefore, if 18db is 64:1 then 8db must be one tenth of that or 6.4:1. Pencil that one in. Now we can go up and down in 3db steps from that value. 8 minus 3 equals 5 so 5db must be 3.2:1. Opposite 2db pencil in half the value for 5db. Going up the other way from 8db by doubling so 11db is about 12.5:1. Check that by going up 10db from 10db to get 20db equals 100:1. Down 3db to 20db means 50:1, another 3db to 14db shows 25:1, while a check on 11db gives 12.5:1. Only a few gaps left now. Let's look at 14db equals 25:1. Taking 10db off 14 gives 4db and that is one tenth of 25:1 or 2.5:1. 3db down to 1db means halving or 1.25:1, 7db is 3db down from 10db or 3db up from 4db. Either way it's 5:1. 3db up from 10db means 13db is 20:1 and so is 16db, must be 40:1 and up another 3db to 19db means 80:1. so now we have all the power ratios. Let's now look at the voltage ratios.

Remember that the ratios for voltage are still related to power but are expressed in terms of the voltage. V^2 squared over R is the power relationship so the voltage ratio is equivalent to the square root of the power ratio. So all we have to do is to take the square root of the power ratios, and we will have the voltage ratios. 2:1 is the square root of 4:1 as is shown and if we take the square root of 2 it means that in voltage ratio 3db is 1.4:1. If we go up by 6db this time since we are in voltage ratios means that 9db must be 2.8:1, and it follows that 15db must be 5.6:1. If 20db represents a 10:1 ratio then 14db being 6 down from 20 must be 5:1 and 8db must be 2.5:1 leaving 1.25:1 for 2db. Now the square root of 16 is 4 so by cross reference to 12db must give us 4:1 which puts 18db as 8:1. It's a check on doubling from 6db. The square root of 80 is so close to 9:1, we can accept that as the value for 19db, which, gives us 4.5:1 for 13db, and so 7db must be 2.25:1, leading to 1db as 1.125:1. Now the square root of 10 is so close to 3.2 that it will give us 10db, leading to 1.6:1 for 4db and 16db is twice 3.2 or 6.4:1. Only three left and they be got by taking the square root of 50 to be about 7. Taking 6db down from that value enables us to get 17db as 7:1 with 11db going to 3.5:1 and of course 5db as 1.8:1.

Cheers, Reg VK3CAZ.

86/07 10

THE ANSWERS TO REG (CAZ) QUESTIONS

Question 1. Since $86 = 20 + 20 + 20 + 20 + 6$
Then the voltage ratio would be equal to
 $10 \times 10 \times 10 \times 10 \times 2$
which is equal to 20,000:1
because 20dB = a ratio of 10:1 and 6dB = a ratio of 2:1

Question 2 For 104dB
 $104 = 20 + 20 + 20 + 20 + 6 + 6 + 6 + 6$
 $= 10 \times 10 \times 10 \times 10 \times 2 \times 2 \times 2 \times 2$
 $= 160,000:1$

Question 3 For 112dB
 $112 = 20 + 20 + 20 + 20 + 20 + 6 + 6$
 $= 10 \times 10 \times 10 \times 10 \times 10 \times 2 \times 2$
 $= 400,000:1$

For the mathematically minded the solutions can be found as follows:

Since $NdB = 20 \log \frac{V1}{V2}$
then for 86dB
 $86 = 20 \log X$ (X being the unknown voltage ratio)
 $X = \text{antilog } \frac{86}{20}$
 $X = 10^{4.3}$
 $X = 19952,623$ (Near enough to 20,000)

For 104dB
 $X = \text{antilog } \frac{104}{20}$
 $X = 10^{5.2}$
 $X = 158489.32$ (160,000)

For 112dB
 $X = \text{antilog } \frac{112}{20}$
 $X = 10^{5.6}$
 $X = 398,107.17$ (400,000)

Cheers Dick VK3VU

LADIES COMMITTEE

LADIES SOCIAL EVENING

7P.M. PANCAKE KITCHEN 14TH AUGUST.

The Ladies Committee wishes to invite
any ladies that wish to join us for an
Evening out and about.

B.Y.O. Drinks.

R.S.V.P. 12TH AUGUST. 'PH 357663

J. FORRESTER
SECRETARY.



86/07

11

FK25A

SPECIAL PREFIX

NEW CALEDONIA

To commemorate the 25th. anniversary of the Amateur Radio Association of New Caledonia, all members of our club will use a special prefix during the period from 9th August to 31st December inclusive.

This prefix will be : FK25

At the same time, and for the same period, the club station will use the call sign : FK25A

In order to allow a maximum number of OM's around the world to qualify for this commemorative award, our members have pledged to be on air as often as possible from August through December.

Also the club station will be activated very frequently.

ARANC FK25A Committee.

Please support this award, we have had great support from FK for our club awards. VK3XEX.

86/07 12

FK25A

SPECIAL AWARD

NEW CALEDONIA

1) Period : from 9th. August untill 31st December 1986 inclusive.
Date limit for award application 31st January 1987.

2) All bands, all modes.

For contacts made via Oscar 10, an individual station may be contacted more than once, but 24 hours minimum between QSO's.

- 3) Conditions :
- 1) Have made ONE QSO with the Club station FK25A
OR
 - 2) Have made THREE QSO's with stations using the FK25 prefix.
OR
 - 3) Have made QSO's with FIVE stations during the abovementioned period, using any of the following prefixes : FK8 - FK1 - or FK0.

4) QSL cards not required.

Log extract certified exact by a radio club or two licensed radio amateurs.

5) Award Price.

- 5 IRC's or \$US 2,00 (surface mail)
- 8 IRC's or \$US 3,00 (airmail)

6) Address for Award Applications :

FK25A AWARD MANAGER
P.O. Box 3956
NOUMEA
New Caledonia (South Pacific)

CONTINUATION OF PACKET RADIO...

Packet radio had its earliest beginnings in Canada, after their regulations were changed in '78 to allow experimentation of digital data type of transmissions. A group in Ottawa devised a high data throughput system that used a very simple 2K byte protocol. Very limited attempts were made to popularize this polled protocol but the idea was taken up by a group in Vancouver who developed a more satisfactory system that came to be known as the Vancouver protocol.

This achieved some popularity in Canada, and even spread to Australia, acquiring some devotees in Sydney and Melbourne who came from the ranks of computer enthusiasts who had found little challenge in amateur radio as it operates at present in Australia, and had turned to computers where, at the time, the scene was one of development and experimentation. The ability to interconnect their computers together using amateur radio proved to be a real advantage. These groups became major champions of the cause, and successfully demonstrated this system to amateurs at conventions and club nights etc. and in so doing, created much interest in packet radio. Some time after the protocol was launched, it was up-dated to overcome a few problems and improve things a little. This came to be known as the Vancouver type 2 protocol, V2, this left some of the adherents using what was now called V1 protocol, and some the V2. The scene today though, is that nearly everyone is now using V2.

The Americans, meanwhile, had not been inactive, and had examined the international commercial packet protocol known

86/07 14

as X.25 (packet type communication has been in use commercially for some time) and having modified it suitably to suit amateur requirements, designated it AX.25 Other than those amateurs living near the Canadian border, US amateurs use only the AX.25 system.

During November 1985, member countries of the IARU met in New Zealand. On the agenda was packet radio. Representatives of countries in region 3 voted to adopt AX.25 as the preferred packet protocol, with Australia abstaining. The point of view of the Australian representative was that packet is an experimental mode and as such, no particular protocol should be favoured.

On Sunday, 8th December 1985, the N.S.W. conference of clubs was held at Teralba. During the conference several items concerning packet were voted on. The results were :-

That AX.25 be adopted as the preferred protocol, (28 in favour, 18 against and 3 abstaining)

Recommended that the same H.F. frequencies as the U.S.A. be adopted, and that the CCITT standard be adopted for H.F. operation.

The Canadians are not letting the grass grow under their feet however, as updates to their protocol keep arriving and both the Melbourne and Sydney groups are actively promoting the system. At the recent Gosford Amateur Convention , the Sydney Amateur Digital Communications Group (who use V2) produced a very convincing demonstration of high definition still picture television, in colour, transmitted via packet. Sounds like the writing is on the wall for traditional slow-scan television !

The 2M Sin

It has been said;and said by many,that the 2M repeaters appear to belong to the self appointed few!!!!

Recently;as most members know,I went on a two month holiday to Queensland, travelling by car through Vic. western N.S.W. (Dubbo) across to Rockhampton via Toowoomba. From Rocky we did a trip to Airlie Beach, and finally the Queensland coast on the way down to N.S.W. following the Princes Highway to Sydney, then the Hume highway for most of the way home.

For the purpose of making a few contacts on the way_ and to relieve boredom,I installed a 2M transceiver (temporary of course)and considering that it was in the way under my left elbow,it proved an utter flop....The reason being that there was absolutely no response throughout Vic to Tocumwal,nor through N.S.W.to the Queensland border via Dubbo. Once in Queensland the attitude of 'area locals'appeared to change,as I actually made a contact in Toowoomba(unfortunately I didn't record his call sign)yes! I did,here it is,VK4BCC Barry,at Monto,who gave me instructions as to where I could purchase a lead (power type) for my FT77(Ileft the original on the shack bench??:??). From Toowoomba to Rockhampton I never missed out on a reply to my calls,but once I became portable in Rocky the freeze set in again. On the move again going north to Airlie Beach contacts were made from hams at Bundaberg,McKay,Proserpine and even South to Gladstone.

The story re peats itself on the return journey --- plenty of contacts mobile in Queensland,and then nothing through N.S.W. and Victoria.

That first sentence makes its point when you are aware of operators using the frequencies,and being polite, you wait for a break - or finish,and call in -----No Reply! then seconds later renewed activity ??:???. Similarly;I believe,Ballarat is guilty of the same sin. Redemption is in the hands of the individual and if we want a better response on Thursday nights - why not start by nurturing contacts on 2M.

JOHN VK3KJB

WE HAVE WHAT YOU NEED AT...

WECAM
Communications
Sales & Service
(053)39 2808



YAESU

 **ICOM** and others

11 Malmsbury Str. Wendouree 3355--

CALL US OR SEE BRIAN STARES, VK3 KQB

COAX, Rotator and L.T. Cable, Plugs and connectors, Transistors and IC's, Aerials and assorted parts always in stock. Call for prices and information.

EVERYTHING FROM A TO Z IN ELECTRONICS